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EXAMINER				
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ART UNIT		PAPER NUMBER		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/534,984

Applicant(s)

HIGAKI ET AL.

Examiner

Irina Krylova

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2 and 7-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2 and 7-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/26/09 has been entered.
2. In view of Applicant's arguments filed on 06/26/09 and discussion during an interview with Applicant held on 08/20/09, a rejection of claims 2, 7, 9-11 under 35 U.S.C. 103(a) as being unpatentable over **Kamoshita et al** (US 5,229,457) and a rejection of claim 2 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2 of U.S. Patent No. 5,229,457 (**Kamoshita et al**), have been withdrawn.
3. However, upon conducting a search update, new relevant references were uncovered. It is the examiner's position that these references would bar patentability of the present claims, absent evidence to the contrary. In order to maintain a complete file wrapper record, the examiner has applied these references (see rejections below), and, has made the present action non-final in order to afford applicants an opportunity to assess the rejections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 2, 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miyajima et al** (US 5,635,565) in view of **Guntherberg et al** (US 6,323,279).

5. Miyajima et al discloses a thermoplastic resin composition comprising (col. 7, lines 32-35):

A) 5-99% of a modified acrylic rubber obtained by polymerizing:

- a) 50-85%wt of an **acrylic rubber** (col. 2, lines 45-67);
- b) 5-48%wt of an aromatic vinyl compound;
- c) **2-45%wt of a vinyl cyanide** (col. 2, lines 32-40)

B) 1-95%wt of additional thermoplastic resin used alone or in **combination of two or more** comprising:

1) rubber-modified thermoplastic resin obtained by polymerizing a monomer mixture comprising an aromatic vinyl compound and a vinyl cyanide in the presence of a rubbery polymer, wherein the rubbery polymer comprises a **diene rubber** (col. 6, lines 35-47; col. 2, lines 44-67);

2) copolymers obtained by polymerizing a monomer mixture comprising an **aromatic vinyl compound** and a **vinyl cyanide**, wherein the proportion of the vinyl cyanide is **1 to 50% by weight** (col. 6, lines 54-67; col. 7, lines 1-5).

6. The specific Examples provided in Table 2 show compositions comprising a mixture of modified rubber with two styrene/acrylonitrile copolymers: one having 25% acrylonitrile, the other copolymer comprising 30% acrylonitrile (col. 11, lines 18-26, Example 7 in Table). In addition, the Examples provide different combinations of modified rubbery polymer with styrene/acrylonitrile copolymer(s) to obtain compositions having different flexural modulus value.

7. As to instant claims 7-10, the composition may be molded into various molded articles by injection molding, sheet extrusion molding, blow molding (col. 8, lines 4-8). Since the composition comprises an excellent mechanical strength and an excellent impact resistance (see col. 1, lines 5-10), therefore, it would have been obvious to a one

of ordinary skill in the art that the composition of **Miyajima et al** can be used for making an automobile exterior molded article.

8. As to instant claim 11, since the content of vinyl cyanide in the components of the composition falls within the ranges of the content of vinyl cyanide claimed in the instant invention, therefore, it would have been obvious that the content of the bonded vinyl cyanide in the acetone-soluble fraction of the composition of **Miyajima et al** will fall within the same range for bonded vinyl cyanide in the acetone-soluble fraction claimed in the instant invention.

9. Since **Miyajima et al** teaches the use of a combination of both modified acrylic rubber and modified diene rubber, and styrene/acrylonitrile copolymers comprising different content of vinyl cyanide monomer (25% and 30% as in Example 7) to produce compositions comprising different flexural modulus values, and the ranges of the components in the composition of **Miyajima et al** are within the same ranges claimed in the instant invention, therefore, it would have been obvious to one skilled in the art at the time of the invention was made to try to make variations within the ranges given by **Miyajima et al** to obtain predictable results (flexural modulus).

10. **Miyajima et al** fails to specify the combination of:

e1) 5-40%mass of a copolymer of an aromatic vinyl compound with a vinyl cyanide, wherein the bonded vinyl cyanide content is 30 to 50%mass and

e2) 5-25%mass of a copolymer of an aromatic vinyl compound with a vinyl cyanide, wherein the bonded vinyl cyanide content is less than 30%mass.

11. Guntherberg et al discloses a thermoplastic molding composition comprising:

A') 5-80%wt of a graft polymer comprising;

a1') 40-90%wt of elastomeric conjugated diene;

a2') 10-60%wt of a graft made from a vinyl aromatic monomer and 5-35%wt of acrylonitrile;

B') 20-95%wt of thermoplastic polymer comprising:

b1') 69-81%wt of vinylaromatic monomer;

b2') **19-31%wt of acrylonitrile**;

C') 0-95%wt, preferably 0-70%wt, of thermoplastic polymer comprising:

c1') 63-69%wt of vinylaromatic monomer;

c2') **31-37%wt of acrylonitrile** (col. 10, lines 50-65), specific example D1 in Table 3 provides the content of **acrylonitrile of 33%wt** (see col. 20, Table 3).

12. The molding composition of **Guntherberg et al** comprises **good mechanical properties**, high strength and toughness, **good impact strength**, even at low temperatures (col. 2, lines 12-18), **good pigmentability** (col.3, lines 34-40).

13. As to instant claims 9-10, the composition may be processed by extrusion, injection molding, compression molding, blow molding (col. 18, lines 46-50).

14. Since

1) **Miyajima et al** discloses a thermoplastic resin composition comprising

A) 5-99% of a modified acrylic rubber obtained by polymerizing an **acrylic rubber**; an aromatic vinyl compound and a **vinyl cyanide**;

B) 1-95%wt of additional thermoplastic resin used alone or in **combination of two or more** comprising:

b1) diene rubber-modified thermoplastic resin obtained by polymerizing a monomer mixture comprising an aromatic vinyl compound and a vinyl cyanide in the presence of a rubbery polymer,

b2) copolymers obtained by polymerizing a monomer mixture comprising an **aromatic vinyl compound** and a **vinyl cyanide**, wherein the proportion of the vinyl cyanide is **1 to 50% by weight** (col. 6, lines 54-67; col. 7, lines 1-5),

but fails to specify the use of the component b2) as a combination of 5-40%wt of a copolymer of aromatic vinyl compound with vinyl cyanide having 30-50%wt of vinyl cyanide and 5-25%wt of a copolymer of aromatic vinyl compound with vinyl cyanide having less than 30%wt of vinyl cyanide;

2) **Guntherberg et al** discloses a thermoplastic molding composition comprising:

A') 5-80%wt of a graft polymer comprising;

a1') 40-90%wt of elastomeric conjugated diene;

a2') 10-60%wt of a graft made from a vinyl aromatic monomer and 5-35%wt of acrylonitrile;

B') 20-95%wt of thermoplastic polymer comprising:

b1') 69-81%wt of vinylaromatic monomer;

b2') **19-31%wt of acrylonitrile**, preferably **22-29%wt** (col. 9, lines 30-35);

C') 0-95%wt, preferably 0-70%wt, of thermoplastic polymer comprising:

c1') 63-69%wt of vinylaromatic monomer;

c2') **31-37%wt of acrylonitrile**, specifically **33%wt** of acrylonitrile (see col. 20, Table 3),

wherein the molding composition of **Guntherberg et al** comprises high strength and toughness, good impact strength, even at low temperatures (col. 2, lines 12-18), good pigmentability (col.3, lines 34-40), therefore,

it would have been obvious to a one of ordinary skill in the art at the time of the invention was made to include the composition of **Guntherberg et al** as a (B) component into composition of **Miyajima et al** to provide the composition of **Miyajima et al** with good impact strength, even at low temperatures (see col. 2, lines 12-18 in **Guntherberg et al**) and good pigmentability (see col.3, lines 34-40 in **Guntherberg et al**).

15. All the ranges of the components in the composition of **Miyajima et al** in view of **Guntherberg et al** are overlapping with the ranges of the components in the

composition claimed in the instant invention. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir. 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

16. As to instant claim 11, since all ranges in the components of the composition of **Miyajima et al** in view of **Guntherberg et al** overlap with the ranges of the component of the composition claimed in the instant invention, therefore, it would have been obvious to a one of ordinary skill in the art that the content of bonded vinyl cyanide compounds in the composition of **Miyajima et al** in view of **Guntherberg et al** will fall within the same ranges as the content of bonded vinyl cyanide claimed in the instant invention.

17. Since the composition of **Miyajima et al** in view of **Guntherberg et al** is identical to the composition claimed in the instant invention with the ranges of the components in the composition of **Miyajima et al** in view of **Guntherberg et al** overlapping with the ranges of corresponding components of the composition claimed in the instant invention, therefore, it would have been obvious to a one of ordinary skill in the art at the

time of the invention was made that flexural modulus and coefficient of linear expansion of the composition of **Miyajima et al** in view of **Guntherberg et al** would obviously be identical to the flexural modulus and coefficient of linear expansion of the composition claimed in the instant invention. In addition, since coefficient of linear expansion and flexural modulus of the composition depend on relative amounts of the components in the composition, such limitation as relative amounts of the components of the composition become result effective variables, therefore, it would have been obvious to one skilled in the art at the time of the invention was made, to make variations in the content of the aromatic vinyl /acrylonitrile copolymer B' having 22-29%wt of acrylonitrile and the content of aromatic vinyl /acrylonitrile copolymer C' having 31-37%wt of acrylonitrile of the composition of **Miyajima et al** in view of **Guntherberg et al** to obtain the desired properties, including flexural modulus and coefficient of linear expansion, of the final composition. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (MPEP 2144.05 II).

18. Since the composition of **Miyajima et al** in view of **Guntherberg et al** comprises an excellent mechanical strength, excellent impact resistance even at low temperatures, and is used for making molding articles by extrusion, injection molding (see col. 8, lines 4-11 of **Miyajima et al**), therefore, it would have been obvious to a one of ordinary skill in the art that the composition of **Miyajima et al** in view of **Guntherberg et al** can be used for making an automobile exterior molded article as well.

In addition, claim 7 is an intended use claim. As to the claimed intended use,

MPEP 2111.02 states:

During examination, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. [MPEP 2111.02 (Citing *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963)]

No structural difference can be discerned between the prior art and the instant invention.

19. Claims 2, 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miyajima et al** (US 5,635,565) in view of **Mishima et al** (US 5,466,759).

20. The discussion with respect to **Miyajima et al** (US 5,635,565) set forth in paragraphs 5-9 above, is incorporated here by reference.

21. Miyajima et al fails to specify the combination of:

e1) 5-40%mass of a copolymer of an aromatic vinyl compound with a vinyl cyanide, wherein the bonded vinyl cyanide content is 30 to 50%mass and

e2) 5-25%mass of a copolymer of an aromatic vinyl compound with a vinyl cyanide, wherein the bonded vinyl cyanide content is less than 30%mass.

22. Mishima et al discloses injection molding composition comprising (col. 2, lines 34-64):

A') 15-80 pbw of a copolymer comprising:

a1') 60-85%wt of a methylstyrene;

a2') 15-35%wt of vinyl cyanide units, specifically **28%** acrylonitrile (example A-1, Table 2, col. 7);

B') 5-40 pbw of a graft copolymer comprising:

b1') 40-90 pbw of a rubbery polymer comprising diene rubber (col. 3, lines 59-60);

b2') 10-60 pbw of a monomer mixture comprising a vinyl cyanide monomer and aromatic vinyl monomer;

E') 0.5-10 pbw of a copolymer comprising:

e1') 5-40%wt vinyl cyanide units, specifically **30%** acrylonitrile (Example E-5, Table 1, col. 7);

e2') 0-65% another vinyl monomer comprising styrene and/or methylstyrene, specifically 5% styrene and 5% methylstyrene (Example E-5, Table 1).

23. The injection molding composition of **Mishima et al** comprises a good balance of impact strength and non-peeling property and is excellent in moldability (Abstract).

24. Since

1) **Miyajima et al** discloses a thermoplastic resin composition comprising

A) 5-99% of a modified acrylic rubber obtained by polymerizing an **acrylic rubber**; an aromatic vinyl compound and a **vinyl cyanide**;

B) 1-95%wt of additional thermoplastic resin used alone or in **combination of two**

or more comprising:

b1) diene rubber-modified thermoplastic resin obtained by polymerizing a monomer mixture comprising an aromatic vinyl compound and a vinyl cyanide in the presence of a rubbery polymer,

b2) copolymers obtained by polymerizing a monomer mixture comprising an **aromatic vinyl compound** and a **vinyl cyanide**, wherein the proportion of the vinyl cyanide is **1 to 50% by weight** (col. 6, lines 54-67; col. 7, lines 1-5),

but fails to specify the use of the component b2) as a combination of 5-40%wt of a copolymer of aromatic vinyl compound with vinyl cyanide having 30-50%wt of vinyl cyanide and 5-25%wt of a copolymer of aromatic vinyl compound with vinyl cyanide having less than 30%wt of vinyl cyanide;

2) **Mishima et al** discloses injection molding composition comprising

A') 15-80 pbw of a copolymer comprising:

a1') 60-85%wt of a methylstyrene;

a2') 15-35%wt of vinyl cyanide units, specifically **28%** acrylonitrile;

B') 5-40 pbw of a graft copolymer comprising:

b1') 40-90 pbw of a rubbery polymer comprising diene rubber

b2') 10-60 pbw of a monomer mixture comprising a vinyl cyanide monomer and aromatic vinyl monomer;

E') 0.5-10 pbw of a copolymer comprising:

e1') 5-40%wt vinyl cyanide units, specifically **30%** acrylonitrile;

e2') 0-65% another vinyl monomer comprising styrene and/or methylstyrene,

specifically 5% styrene and 5% methylstyrene;
wherein the composition of **Mishima et al** comprises a good balance of impact strength and non-peeling property and is excellent in moldability (Abstract);
therefore,
it would have been obvious to a one of ordinary skill in the art at the time of the invention was made to use the composition of **Mishima et al** as a component (B) in the composition of **Miyajima et al** to provide the composition of **Miyajima et al** with good impact strength and also with good non-peeling property and excellent moldability (see Abstract in **Mishima et al**).

25. All the ranges of the components in the composition of **Miyajima et al** in view of **Mishima et al** are overlapping with the ranges of the components in the composition claimed in the instant invention. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir. 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

26. As to instant claim 11, since all ranges in the components of the composition of **Miyajima et al** in view of **Mishima et al** overlap with the ranges of the component of the

composition claimed in the instant invention, therefore, it would have been obvious to a one of ordinary skill in the art that the content of bonded vinyl cyanide compounds in the composition of **Miyajima et al** in view of **Mishima et al** will fall within the same ranges as the content of bonded vinyl cyanide claimed in the instant invention.

27. Since the composition of **Miyajima et al** in view of **Mishima et al** is identical to the composition claimed in the instant invention with the ranges of the components in the composition of **Miyajima et al** in view of **Mishima et al** overlapping with the ranges of corresponding components of the composition claimed in the instant invention, therefore, it would have been obvious to a one of ordinary skill in the art at the time of the invention was made that flexural modulus and coefficient of linear expansion of the composition of **Miyajima et al** in view of **Mishima et al** would obviously be identical to the flexural modulus and coefficient of linear expansion of the composition claimed in the instant invention. In addition, since coefficient of linear expansion and flexural modulus of the composition depend on relative amounts of the components in the composition, such limitation as relative amounts of the components of the composition become result effective variables, therefore, it would have been obvious to one skilled in the art at the time of the invention was made, to make variations in the content of the aromatic vinyl /acrylonitrile copolymer A' having 28%wt of acrylonitrile and the content of aromatic vinyl /acrylonitrile copolymer E' having 30%wt of acrylonitrile in the composition of **Miyajima et al** in view of **Mishima et al** to obtain the desired properties,

including flexural modulus and coefficient of linear expansion, of the final composition.

In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (MPEP 2144.05 II).

28. Since the composition of **Miyajima et al** in view of **Mishima et al** comprises an excellent balance of impact strength, non-peeling property, is excellent in moldability and is used for making molding articles by injection molding (see col. 8, lines 4-11 of **Miyajima et al**), therefore, it would have been obvious to a one of ordinary skill in the art that the composition of **Miyajima et al** in view of **Mishima et al** can be used for making an automobile exterior molded article as well.

In addition, claim 7 is an intended use claim. As to the claimed intended use, MPEP 2111.02 states:

During examination, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. [MPEP 2111.02 (Citing *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963)]

No structural difference can be discerned between the prior art and the instant invention.

29. Claims 2, 7-11 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Jung** (US 6,114,442) in view of **Mishima et al** (US 5,466,750).

30. Jung discloses a chemical and heat-resistant styrene-based composition comprising (col. 2, lines 1-5):

A) 10-50 pbw of a graft copolymer of a diene rubber comprising:

a1) 40-70 pbw of diene rubber;

a2) 30-60 pbw of styrene-acrylonitrile copolymer (col. 3, lines 31-36);

B) 10-50 pbw of a graft copolymer of acrylate rubber comprising:

b1) 40-70 pbw of acrylate rubber;

b2) 30-60 pbw of styrene-acrylonitrile copolymer (col. 3, lines 18-30);

C) 10-30pbw of styrene-acrylonitrile copolymer;

D) 10-50%wt of styrene-methylstyrene-vinyl cyanide copolymer (Abstract; col. 3, lines 58-67).

31. The copolymers C) and D) appear to have the content of acrylonitrile of less than 30%: the copolymer C) - of 24%wt; D) - of 13%wt (see col. 5, lines 40-67).

32. The composition comprises increased chemical resistance and heat resistance (col. 1, lines 6-10).

33. As to instant claims 7-8, the composition can be used in a variety of automobile parts (col. 1, lines 10-12).

34. Jung fails to teach the composition further comprising 5-40%wt of a styrene-vinyl cyanide copolymer having the bonded vinyl cyanide of 30-50%wt.

35. Mishima et al discloses injection molding composition for making injection molded articles comprising (col. 2, lines 34-64):

A') 15-80 pbw of a copolymer comprising:

a1') 60-85%wt of a methylstyrene;

a2') 15-35%wt of vinyl cyanide units, specifically **28%** acrylonitrile (example A-1, Table 2, col. 7);

B') 5-40 pbw of a graft copolymer comprising:

b1') 40-90 pbw of a rubbery polymer comprising diene rubber (col. 3, lines 59-60);

b2') 10-60 pbw of a monomer mixture comprising a vinyl cyanide monomer and aromatic vinyl monomer;

E') 0.5-10 pbw of a copolymer comprising:

e1') 5-40%wt vinyl cyanide units, specifically **30%** acrylonitrile (Example E-5, Table 1, col. 7);

e2') 0-65% another vinyl monomer comprising styrene and/or methylstyrene, specifically 5% styrene and 5% methylstyrene (Example E-5, Table 1).

36. Mishima et al further teaches that the copolymer E') is blended in the composition to give high moldability without impairing the impact strength nor causing peeling of the molded articles (col. 4, lines 63-67).

37. Since

1) **Jung** discloses a chemical and heat-resistant styrene-based composition comprising

A) 10-50 pbw of a graft copolymer of a diene rubber comprising:

a1) 40-70 pbw of diene rubber;

a2) 30-60 pbw of styrene-acrylonitrile copolymer (col. 3, lines 31-36);

B) 10-50 pbw of a graft copolymer of acrylate rubber comprising:

b1) 40-70 pbw of acrylate rubber;

b2) 30-60 pbw of styrene-acrylonitrile copolymer (col. 3, lines 18-30);

C) 10-30pbw of styrene-acrylonitrile copolymer;

D) 10-50%wt of styrene-methylstyrene-vinyl cyanide copolymer (Abstract; col. 3, lines 58-67), wherein both component C) and component D) comprise the content of acrylonitrile of less than 30%wt;

but fails to teach the composition further comprising 5-40%wt of a styrene-vinyl cyanide copolymer having the bonded vinyl cyanide of 30-50%wt;

2) **Mishima et al** discloses injection molding composition similar to the composition of **Jung**, but further teaches addition of a copolymer of styrene-acrylonitrile having 5-40%, specifically 30%wt of acrylonitrile units to give high moldability without impairing the impact strength nor causing peeling of the molded articles (col. 4, lines 63-67);

therefore,

it would have been obvious to a one of ordinary skill in the art to include the copolymer of styrene-acrylonitrile having 5-40%, specifically 30%wt of acrylonitrile units of **Mishima et al** into the composition of **Jung**, to improve moldability without impairing the impact strength nor causing peeling of the molded articles of **Jung**.

38. All the ranges of the components in the composition of **Jung** in view of **Mishima et al** are overlapping with the ranges of the components in the composition claimed in the instant invention. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir. 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

39. Since the composition of **Jung** in view of **Mishima et al** is identical to the composition claimed in the instant invention with the ranges of the components in the composition of **Jung** in view of **Mishima et al** overlapping with the ranges of corresponding components of the composition claimed in the instant invention, therefore, it would have been obvious to a one of ordinary skill in the art at the time of the invention was made that flexural modulus and coefficient of linear expansion of the

composition of **Jung** in view of **Mishima et al** would obviously be identical to the flexural modulus and coefficient of linear expansion of the composition claimed in the instant invention. In addition, since coefficient of linear expansion and flexural modulus of the composition depend on relative amounts of the components in the composition, such limitation as relative amounts of the components of the composition become result effective variables, therefore, it would have been obvious to one skilled in the art at the time of the invention was made, to make variations in the content of the aromatic vinyl /acrylonitrile copolymer having less than 30%wt of acrylonitrile and the content of aromatic vinyl /acrylonitrile copolymer having 30%wt of acrylonitrile in the composition of **Jung** in view of **Mishima et al** to obtain the desired properties, including flexural modulus and coefficient of linear expansion, of the final composition. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (MPEP 2144.05 II).

40. As to instant claim 11, since all ranges in the components of the composition of **Jung** in view of **Mishima et al** overlap with the ranges of the component of the composition claimed in the instant invention, therefore, it would have been obvious to a one of ordinary skill in the art that the content of bonded vinyl cyanide compounds in the composition of **Jung** in view of **Mishima et al** will fall within the same ranges as the content of bonded vinyl cyanide claimed in the instant invention.

41. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miyajima et al** (US 5,635,565) in view of **Guntherberg et al** (US 6,323,279), in further view of **Jung** (US 6,114,442).

42. The discussion with respect to **Miyajima et al** (US 5,635,565) in view of **Guntherberg et al** (US 6,323,279), set forth in paragraphs 4-18 above, is incorporated here by reference.

43. Miyajima et al in view of **Guntherberg et al** fail to specify the injection molded articles being an automobile exterior part.

44. Jung discloses a chemical and heat-resistant styrene-based composition comprising (col. 2, lines 1-5):

A) 10-50 pbw of a graft copolymer of a diene rubber comprising:

a1) 40-70 pbw of diene rubber;

a2) 30-60 pbw of styrene-acrylonitrile copolymer (col. 3, lines 31-36);

B) 10-50 pbw of a graft copolymer of acrylate rubber comprising:

b1) 40-70 pbw of acrylate rubber;

b2) 30-60 pbw of styrene-acrylonitrile copolymer (col. 3, lines 18-30);

C) 10-30pbw of styrene-acrylonitrile copolymer;

D) 10-50%wt of styrene-methylstyrene-vinyl cyanide copolymer (Abstract; col. 3, lines 58-67),

wherein the composition is used for making a variety of automobile parts (col. 1, lines 5-12).

45. Since

1) **Miyajima et al** in view of **Guntherberg et al** disclose a composition for making molded articles comprising a mixture of a grafted acrylate rubber, a grafted diene rubber, copolymers of styrene and acrylonitrile having different content of acrylonitrile units; but fail to specify the molded article being an automobile part;

2) **Jung** discloses a composition similar to the composition of **Miyajima et al** in view of **Guntherberg et al**, wherein the composition is heat resistant and is used for making automobile parts; therefore, it would have been obvious to a one of ordinary skill in the art at the time of the invention was made to use the composition of **Miyajima et al** in view of **Guntherberg et al** for making automobile parts as well.

46. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miyajima et al** (US 5,635,565) in view of **Mishima et al** (US 5,466,759) in further view of **Jung** (US 6,114,442).

47. The discussion with respect to **Miyajima et al** (US 5,635,565) in view of **Mishima et al** (US 5,466,759), set forth in paragraphs 19-28 above, is incorporated here by reference.

48. Miyajima et al in view of **Mishima et al** fail to specify the injection molded articles being an automobile exterior part.

49. Jung discloses a chemical and heat-resistant styrene-based composition comprising (col. 2, lines 1-5):

A) 10-50 pbw of a graft copolymer of a diene rubber comprising:

a1) 40-70 pbw of diene rubber;

a2) 30-60 pbw of styrene-acrylonitrile copolymer (col. 3, lines 31-36);

B) 10-50 pbw of a graft copolymer of acrylate rubber comprising:

b1) 40-70 pbw of acrylate rubber;

b2) 30-60 pbw of styrene-acrylonitrile copolymer (col. 3, lines 18-30);

C) 10-30pbw of styrene-acrylonitrile copolymer;

D) 10-50%wt of styrene-methylstyrene-vinyl cyanide copolymer (Abstract; col. 3, lines 58-67),

wherein the composition is used for making a variety of automobile parts (col. 1, lines 5-12).

50. Since

1) **Miyajima et al** in view of **Mishima et al** disclose a composition for making molded articles comprising a mixture of a grafted acrylate rubber, a grafted diene rubber,

copolymers of styrene and acrylonitrile having different content of acrylonitrile units; but fail to specify the molded article being an automobile part;

2) **Jung** discloses a composition similar to the composition of **Miyajima et al** in view of **Mishima et al**, wherein the composition is heat resistant and is used for making automobile parts; therefore, it would have been obvious to a one of ordinary skill in the art at the time of the invention was made to use the composition of **Miyajima et al** in view of **Mishima et al** for making automobile parts as well.

51. Claims 2, 7 and 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kim et al** (US 5,747,587).

Kim et al discloses a resin composition comprising:

A) a graft polymer comprising:

- a1) 100 pbw of a monomer mixture of vinyl cyanide and an aromatic vinyl compound;
- a2) 20-60 pbw of a conjugated **diene rubber** (col. 2, lines 35-40);

B) a graft polymer obtained by grafting:

- b1) 100 pbw of monomer mixture of vinyl cyanide and an aromatic vinyl compound;
- b2) 20-60 pbw of an **acrylic rubber** (col. 2, lines 40-45);

C) a copolymer comprising:

- c1) **38-45%wt** of vinyl cyanide units;
- c2) 62-55%wt of an aromatic vinyl compound (col. 4, lines 55-67);

D) a copolymer comprising:

- d1) 28-35%wt of vinyl cyanide compound;
- d2) 72-65% of an aromatic vinyl compound (col. 5, lines 23-35).

52. The ratio by weight of (A)+(B) to (C)+(D) is 50:50 to 20:80; the ratio by weight of (A) to (B) is 10:1 to 1:1; the ratio by weight of (C) to (D) is 10:1 to 5:2 (col. 2, lines 50-56).

53. All the ranges of the components in the composition of **Kim et al**, except the ratio of (A)+(B) to (C)+(D), are overlapping with the ranges of the components in the composition claimed in the instant invention. It is well settled that where the prior art describes the components of a claimed compound or compositions in concentrations within or overlapping the claimed concentrations a prima facie case of obviousness is established. See *In re Harris*, 409 F.3d 1339, 1343, 74 USPQ2d 1951, 1953 (Fed. Cir. 2005); *In re Peterson*, 315 F.3d 1325, 1329, 65 USPQ 2d 1379, 1382 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 16 USPQ2d 1934, 1936-37 (CCPA 1990); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974).

54. Although the ratio of (A)+(B) to (C)+(D) of **Kim et al**, being 50:50 to 20:80, is not overlapping with the ratio of the sum of the grafted rubbers to the sum of the vinyl cyanide/aromatic vinyl copolymers claimed in the instant invention, it is the examiner's position that the values are close enough that one of ordinary skill in the art would have expected the same properties. Case law holds that a prima facie case of obviousness

exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

55. **Kim et al** further teaches that the thermoplastic resin comprising graft polymer (A), graft polymer (B) and the copolymer (C) reduces impact strength, tensile strength (col. 5, lines 39-42). For improving the poor physical properties above, a copolymer having less content of a vinyl cyanide is added (col. 5, lines 49-58).

56. Since the composition of **Kim et al** is identical to the composition claimed in the instant invention with the ranges of the components in the composition of **Kim et al** overlapping with the ranges of corresponding components of the composition claimed in the instant invention, therefore, it would have been obvious to a one of ordinary skill in the art at the time of the invention was made that flexural modulus and coefficient of linear expansion of the composition of **Kim et al** would obviously be identical to the flexural modulus and coefficient of linear expansion of the composition claimed in the instant invention.

57. As to instant claim 11, since all ranges in the components of the composition of **Kim et al** overlap with the ranges of the component of the composition claimed in the instant invention, therefore, it would have been obvious to a one of ordinary skill in the

art that the content of bonded vinyl cyanide compounds in the composition of **Kim et al** will fall within the same ranges as the content of bonded vinyl cyanide claimed in the instant invention.

58. Claim 7 is an intended use claim. As to the claimed intended use,

MPEP 2111.02 states:

During examination, statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference (or, in the case of process claims, manipulative difference) between the claimed invention and the prior art. If so, the recitation serves to limit the claim. [MPEP 2111.02 (Citing *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963))]

No structural difference can be discerned between the prior art and the instant invention.

59. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kim et al** (US 5,747,587) in view of **Jung** (US 6,114,442).

60. The discussion with respect to **Kim et al** (US 5,747,587) set forth in paragraphs 51-58 above, is incorporated here by reference.

61. **Kim et al** fail to specify injection molded articles being an automobile exterior part comprising the grafted rubber composition.

62. Jung discloses a chemical and heat-resistant styrene-based composition comprising (col. 2, lines 1-5):

A) 10-50 pbw of a graft copolymer of a diene rubber comprising:

a1) 40-70 pbw of diene rubber;

a2) 30-60 pbw of styrene-acrylonitrile copolymer (col. 3, lines 31-36);

B) 10-50 pbw of a graft copolymer of acrylate rubber comprising:

b1) 40-70 pbw of acrylate rubber;

b2) 30-60 pbw of styrene-acrylonitrile copolymer (col. 3, lines 18-30);

C) 10-30pbw of styrene-acrylonitrile copolymer;

D) 10-50%wt of styrene-methylstyrene-vinyl cyanide copolymer (Abstract; col. 3, lines 58-67),

wherein the composition is used for making a variety of automobile parts (col. 1, lines 5-12).

63. Since

1) **Kim et al** disclose a composition comprising a mixture of a grafted acrylate rubber, a grafted diene rubber, copolymers of styrene and acrylonitrile having different content of acrylonitrile units, wherein the composition comprises good tensile strength and vacuum formability (col. 5, lines 55-57); but fail to specify the use of the composition for making automobile parts;

2) **Jung** discloses a composition similar to the composition of **Kim et al**, wherein the composition is used for making automobile parts; therefore,

it would have been obvious to a one of ordinary skill in the art at the time of the invention was made to use the composition of **Kim et al** for making automobile parts as well.

Response to Arguments

64. Applicant's arguments filed on 06/26/09 and discussed during the interview with an Applicant on 08/20/09 with respect to claims 2, 7-11 have been considered.

65. The rejection of claims 2, 7, 9-11 under 35 U.S.C. 103(a) as being unpatentable over **Kamoshita et al** (US 5,229,457) and a rejection of claim 2 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2 of U.S. Patent No. 5,229,457 (**Kamoshita et al**) have been withdrawn thus making the arguments moot.

66. Regarding the rejection of claims 2, 7-11 under 35 U.S.C. 103(a) as being unpatentable over **Miyajima et al** (US 5,635,565), Applicant argues that **Miyajima et al** fails to recite the specific amounts of the copolymer of an aromatic vinyl compound and a vinyl cyanide having the content of vinyl cyanide 30-50%wt and a copolymer of an aromatic vinyl compound and a vinyl cyanide having the content of vinyl cyanide of less than 30%.

67. Examiner disagrees.

1) It is noted that the rejection of claims 2, 7-11 under 35 U.S.C. 103(a) as being unpatentable over **Miyajima et al** (US 5,635,565) is withdrawn.

2) The new ground of rejection of claims 2, 7-11 1) under 35 U.S.C. 103(a) as being unpatentable over **Miyajima et al** (US 5,635,565) in view of **Mishima et al** (US 5,466,759) and 2) a rejection under 35 U.S.C. 103(a) as being unpatentable over **Miyajima et al** (US 5,635,565) in view of **Guntherberg et al** (US 6,323,279) is set forth above. Specifically, see the discussion in paragraphs 4-28 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina Krylova whose telephone number is (571)270-7349. The examiner can normally be reached on Monday-Friday 7:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Irina Krylova/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796